

**METHOD AND SYSTEM FOR A GENERIC DOCUMENT  
PROCESSING DEVICE CLIENT**

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**BACKGROUND**1. Field

This disclosure relates to document device drivers, more particularly to generic document processing clients for networked printers.

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2. Background

In a typical office environment, users have access to several different types of devices for processing documents across a network. The devices may include printers, fax machines with dedicated phone lines, network fax machines that fax across a network, such as the Internet, plotters, enterprise document management (EDM) systems and knowledge management systems, as examples. The documents discussed here may include text documents, images, drawings, spreadsheets among many other user-generated items that user desire to be processed. Similarly, processing of these documents may include faxing, printing, copying, converting to different formats, entry into EDM and knowledge management systems, among others.

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Currently, document processing typically involves having a device specific driver on the user's workstation. The user desiring the processing will request the processing from within the document generation application that user is running. The document generation application hands the document off to the device-specific driver and the driver converts it into the appropriate format for that device.

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For example, a user desires to print a document from Microsoft® Word®. The user selects File>Print from the pull-down menu or selects the printer icon from a toolbar.

Word then accesses the driver for the default printer. The default printer has been previously designated by the user and the appropriate driver has been loaded and identified as the default driver. The driver then converts the document into a print data file and sends it to the printer.

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The print data file then enters the printer queue and when the printer reaches that point in the queue, the document is printed.

There are several undesirable issues with this type of application. For example, the user may want to designate another printer but does not have the appropriate driver installed.

The user can easily designate another network printer but then has to wait while the appropriate driver is accessed. If the appropriate driver is not installed, the user then has to locate the driver and provide it to the workstation for installation.

A larger problem is management of networked printers. Every time a new printer is  
5 added to a network, each workstation that may need access to that printer must have the specific driver for that printer installed. In larger networks, this can be time consuming and tedious to install and track all of the various copies of the printer drivers.

The problem becomes even more problematic when several different varieties of  
printers are on the network. When several different types of networked document processing  
10 devices are available, each type having several different varieties, management of the drivers  
may become oppressive.

Therefore, it would be desirable for a generic, non-device-specific driver to be  
installed on each workstation for interfacing with several different kinds of networked  
document processing devices, as well as several different varieties of each type.

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## SUMMARY

One aspect of the disclosure is a method for network printing. An interface between a  
document processing device and a workstation is activated. The interface provides a user  
interface to a user at the workstation, allowing the user to select operational settings for the  
20 document-processing device. A document data file is generated in accordance with the  
operational settings. The location of the document data file and any auxiliary information is  
communicated to the document-processing device, activating a document-processing job.  
The interface then receives a completion message upon completion of the document-  
processing job.

25 Another aspect of the disclosure is a network document processing system. The  
system includes a generic document processing client installed on at least one workstation  
connected to a network, a job file store connected to the network and at least one document  
processing device.

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## BRIEF DESCRIPTION OF THE DRAWINGS

The invention may be best understood by reading the disclosure with reference to the  
drawings, wherein:

Figure 1 shows one example of a network with several different document-processing devices connected to it, in accordance with the invention.

Figure 2 shows a block diagram of an interaction between a workstation and a document-processing device, in accordance with the invention.

5 Figure 3 shows a block diagram of a method for network printing, in accordance with the invention.

## DETAILED DESCRIPTION OF THE EMBODIMENTS

A few solutions have been proposed to assist in solving the dedicated device-specific  
10 driver installed on each workstation. HDE, Inc., which recently became part of Peerless  
Systems, Inc., has two such solutions. In a first approach, a pull printing approach is initiated  
with a web browser. A user fills out a web page of information, which includes a path to the  
file to be printed. The user file is then pulled to an intermediate server, referred to as the Pull  
Printing Server, when the file is then processed with a traditional print driver and the resulting  
15 stream is sent to the printer. This alleviates having to proliferate the drivers to each  
workstation for each device, however the pull-printing server can be problematic.

Although the drivers for each device do not need to be proliferated throughout the  
network to each workstation, each pull-printing server must have the proper drivers.  
Additionally, the user must launch the web browser, as the process does not work within any  
20 given application. Finally, the pull printing server must have at least a portion of the user  
application to process the application file sent to the pull printing server.

Another solution, again by HDE, Inc., is remote printing. The user installs a printer  
specific print driver that allows the user to print across the Internet. The printers must be  
“redipS” enabled, which is a proprietary HDE technology. Further, the remote printing only  
25 works with one type of printer, NEC SuperScript 4650 printers.

Neither of these solutions solves the problems mentioned above. Each still requires a  
device-specific driver, or cannot be handled from within a user application. Additionally,  
both are print specific, not addressing access to other types of document processing devices.

Figure 1 shows a network document processing system, in accordance with the  
30 present invention. At least one workstation, such as 12 and 14, are connected to the network.  
At least one of the workstations has installed on it a generic document-processing client. As  
will be discussed in more detail further, the generic document-processing client provides an  
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interface between the workstation and different types of document processing devices also connected to the network. The term workstation as used here will include any type of device that has a display and is capable of connecting to a document-processing device. This includes, but is not limited to, desktop computers, laptop computers, personal digital assistants, even cellular telephones that allow users to browse networks that may contain documents to be processed.

Document processing devices may include printers, fax machines with dedicated phone lines, network fax machines that fax across a network, such as the Internet, plotters, enterprise document management (EDM) systems and knowledge management systems, as examples. The documents discussed here may include text documents, images, drawings, spreadsheets among many other user-generated items that user desire to be processed.

Similarly, processing of these documents may include faxing, printing, copying, converting to different formats, entry into enterprise document management (EDM), language translation servers, and knowledge management systems, among others. As examples, document-processing devices including a printer 16, a fax machine 18, an interface to an EDM system 20, is shown connected to the network 10.

In addition, a job file store (JFS) 22 is shown connected to the network. As will be discussed in further detail with regard to Figures 2 and 3, the job file store serves as a repository of document data files generated by the generic document-processing client.

Referring now to Figure 2, one of the workstations 12 connected to the network 10 in Figure 1 is shown in more detail. The workstation 12 has installed on it a generic document-processing client 24. The workstation is connected to various document processing devices through the network 10. The generic document-processing client 24 allows the user to interact with any of these devices without requiring a device-specific driver for each device to be installed on the workstation 12. In some cases, the document processing client 24 may be a printer client, a fax client, operable to interact with either a dedicated fax machine or a network fax machine that uses a network to transmit documents in traditional fax format, an EDM client or a knowledge management system client.

The interaction between the generic document processing client, the user's workstation and the document-processing device will be discussed with reference to Figure 3. In a specific example, a user desires to print a document. The user may be working in an application such as one of the Microsoft® Office® products, or any other document

generation application. The user then selects to print the document, in this example. The selection of the application print function launches the generic document-processing client. The generic document processing client then locates the designated device, in this case a printer, and acts as an interface between that device and the user application at 30.

5 Once the generic document-processing client locates the device, it accesses the various operational settings available to the user, typically in the form of a network interface, such as a web page. It then provides a user interface to the user at 32. The user interface may include launching a web browser to allow the user to view and make selections from settings on a web page. The user makes the necessary selections. In the example of a printer, the  
10 settings may be such things as number of copies, page orientation, stapling options, paper selection, etc. Once the user makes those selections, a document data file is generated in accordance with any of the settings necessary to create that file at 34. In this example, the document data file will be a printer data file, which is device independent.

Once the document data file is generated, it is stored in a job file store. Referring  
15 back to Figure 2, the JFS may be a separate device from the workstation on the document-processing device. Alternatively, the JFS may be part of the workstation or the printer. The document-processing client then communicates the location of this job file store and the auxiliary information to the printer. Auxiliary information may include the document data file size, and user selected operational settings. In the example of the network being the  
20 Internet or in compliance with the Internet Protocol (IP), the location will be communicated as a Uniform Resource Locator (URL).

In this example, the printer will receive this URL and then retrieves the document data file. In the above example, the document data file will be a device independent printer data file. The printer will then print the job as determined by the user. Once the print job is  
25 completed, a message is sent back to the document-processing client to communicate completion to the user at 38. The document-processing client monitors the completion of the job until this message is received. At that point, the process ends until the user wants to process another document.

Typically, this system and method will be implemented in a software package  
30 installed on the workstation. Some sort of computer readable medium, such as a downloadable file, a CD-ROM or a diskette, will contain software code. The software code, when executed, will result in the process described above. The computer-readable medium  
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may take the form of a print driver, for example above of a printer discussed above. More generally, the computer-readable medium will include a document-processing client operable to perform the methods of the invention.

Thus, although there has been described to this point a particular embodiment for a  
5 method and apparatus for a generic document processing client, it is not intended that such specific references be considered as limitations upon the scope of this invention except in-so-far as set forth in the following claims.